

1 **WHAT IS CLAIMED IS:**

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3 1. **A method for immunizing an animal against heterologous HIV-1 comprising**
4 **administering to said animal an immunogen comprising at least one modified**
5 **HIV-1 envelope protein or fragment thereof, or DNA or virus encoding said at**
6 **least one modified HIV-1 envelope protein or fragment thereof, or a**
7 **combination thereof, said modified envelope protein or fragment thereof**
8 **having a V2 region deletion, wherein said animal exhibits immunity to at least**
9 **one HIV-1 strain other than that of said immunogen.**

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11 2. **The method of claim 1 wherein said immunity comprises a humoral response.**

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13 3. **The method of claim 1 wherein said immunogen comprises a modified HIV-1**
14 **envelope protein from a clade-B HIV-1 strain.**

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16 4. **The method of claim 3 wherein said HIV-strain is SF162.**

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18 5. **The method of claim 4 wherein said modified HIV-1 envelope protein is SEQ**
19 **ID No:2 or SEQ ID No:4.**

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21 6. **The method of claim 4 wherein said DNA encoding said at least one modified**
22 **HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.**

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24 7. **The method of claim 2 wherein said humoral response comprises neutralizing**
25 **antibodies.**

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1 9. The method of claim 2 wherein said humoral response comprises protective
2 antibodies.

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4 8. The method of claim 1 wherein said animal is a human.

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6 9. A method for eliciting a heterologous immune response to HIV-1 in an animal
7 comprising immunizing said animal with an immunogen comprising at least
8 one modified HIV-1 envelope protein or fragment thereof, or DNA or virus
9 encoding said at least one modified HIV-1 envelope protein or fragment
10 thereof, or a combination thereof, said modified envelope protein or fragment
11 thereof having a V2 region deletion, wherein said animal exhibits a an
12 envelope-specific immune response to at least one HIV-1 strain other than that
13 of said immunogen.

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15 10. The method of claim 9 wherein said envelope-specific immune response
16 comprises a humoral response.

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18 11. The method of claim 9 wherein said immunogen comprises a modified HIV-1
19 envelope protein from a clade-B HIV-1 strain.

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21 12. The method of claim 11 wherein said HIV-strain is SF162.

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23 13. The method of claim 12 wherein said modified HIV-1 envelope protein is SEQ
24 ID No:2 or SEQ ID No:4.

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2 ~~14.~~ The method of claim 12 wherein said DNA encoding said at least one modified
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4 ¹⁶
5 ~~15.~~ The method of claim 10 wherein said humoral response comprises neutralizing
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8 ~~16.~~ The method of claim 10 wherein said humoral response comprises protective
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11 ~~17.~~ The method of claim 9 wherein said animal is a human.
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13 ~~18.~~ A pharmaceutical composition for immunizing an animal against HIV-1 virus
14 comprising an effective heterologous envelope-specific immune response-
15 eliciting amount of at least one modified HIV-1 envelope protein or fragment
16 thereof, or DNA or virus encoding said at least one modified HIV-1 envelope
17 protein or fragment thereof, or a combination thereof, said modified envelope
18 protein or fragment thereof having a V2 region deletion; and a
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20 ~~19.~~ The pharmaceutical composition of claim 18 wherein said modified HIV-1
21 envelope protein is from a clade-B HIV-1 strain.
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23 ~~20.~~ The pharmaceutical composition of claim 19 wherein said HIV-1 strain is
24 SF162.
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1 21. The pharmaceutical composition of claim 20 wherein said modified HIV-1
2 envelope protein is SEQ ID No:2 or SEQ ID No:4.

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4 22. The pharmaceutical composition of claim 20 wherein said DNA encoding said
5 at least one modified HIV-1 envelope protein is SEQ ID No:1 or SEQ ID No:3.

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7 23. A method for assessing whether a compound is capable of generating
8 protective antibodies in an animal against at least one heterologous strain of
9 HIV-1, said animal capable of developing protective antibodies against wild-
10 type HIV-1, said method comprising the steps of immunizing said animal with
11 said compound, depleting said animal of its CD8+ T-lymphocytes, and
12 assessing the presence of protective antibodies in the said animal to at least one
13 heterologous strain of HIV-1.

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15 24. The method of claim 23 wherein said depleting is carried out by administering
16 to said animal anti-CD8 monoclonal antibodies.

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18 25. The method of claim 23 wherein said compound is an HIV-derived polypeptide
19 or fragment thereof or a DNA or virus encoding said peptide or fragment
20 thereof.

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22 26. The method of claim 23 wherein said immunizing is carried out with a DNA
23 vaccine, a protein, or a combination thereof.

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25 27. The method of claim 23 wherein said neutralizing antibodies are protective
26 antibodies.